THE NAVY & MARINE CORPS AVIATION SAFETY MAGAZINE

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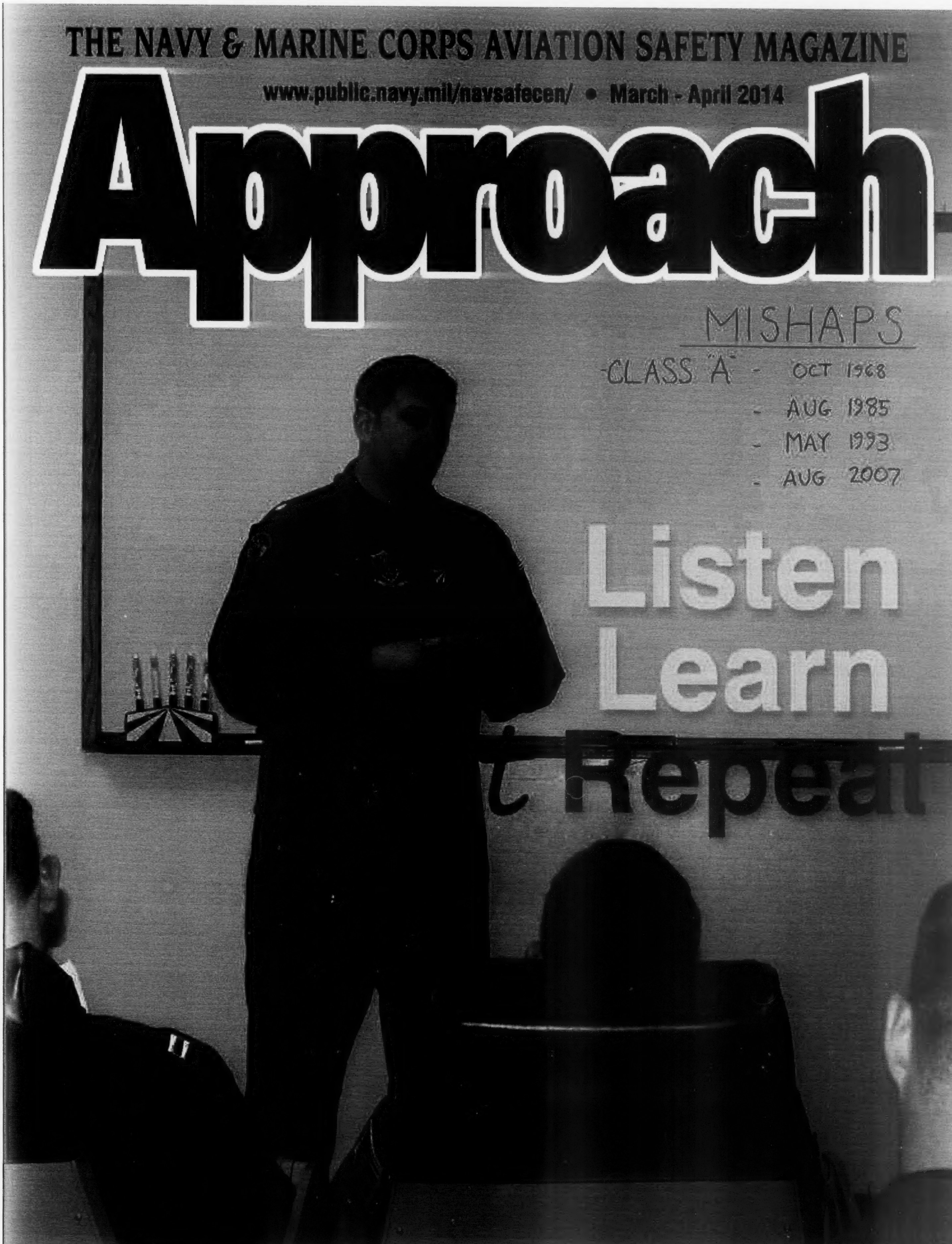
Approach



The Navy & Marine Corps Aviation Safety Magazine

March-April 2014 Volume 59, No. 2

Mishaps cost time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness. This magazine's goal is to help make sure that personnel can devote their time and energy to the mission. We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous; the time to learn to do a job right is before combat starts.

Approach (ISSN 1094-0405) is published bimonthly by Commander, Naval Safety Center, 375 A Street Norfolk, VA 23511-4399, and is an authorized publication for members of the Department of Defense. Contents are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense, or the U.S. Navy. Photos and artwork are representative and do not necessarily show the people or equipment discussed. We reserve the right to edit all manuscripts. Reference to commercial products does not imply Navy endorsement. Unless otherwise stated, material in this magazine may be reprinted without permission; please credit the magazine and author. *Approach* is available for sale by the Superintendent of Documents, P.O. Box 979050, St Louis, MO 63197-9000, or online at: bookstore.gpo.gov. Telephone credit card orders can be made 8 a.m. to 4 p.m. Eastern time at (866) 512-1800.Periodicals postage paid at Norfolk, Va., and additional mailing offices.

Postmaster: Send address changes to *Approach*, Code 71B,
Naval Safety Center, 375 A Street
Norfolk, VA 23511-4399
Send articles and letters to the address above, or via e-mail to the editor, jack.stewart@navy.mil.

CON

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Anymouse Submissions

NAVSAFECEN Anymouse Submissions. Have a safety problem that isn't getting solved? Submit an Anymouse form anonymously. Go to our website for details. https://www.public.portal.navy.mil/navsafecen/Documents/staff/ANYMOUSE_submission.pdf

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Back cover: Photo by MCS2 John Philip Wagner, Jr.

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The Initial Approach Fix

Power of the Past

By CAPT Chris Saindon

Naval aviation history is rich with lessons learned from mishaps that have resulted in changes to the way we do business. Thanks to aircraft mishap boards (AMBs), many changes to NATOPS procedures, training rules, and maintenance publications were well-thought-out and implemented, keeping aviators safe for many years. The "power of the past" helps us explain and reinforce the "whys" behind the way we do business. As naval aviators, we must strive to preserve and pass down the anecdotal and first-hand knowledge of these mishaps and near-misses so that future aviators can fully understand the "why" behind the procedure, rule or limitation. If we can attach a "why" to a written procedure, it is more likely that the procedure will be remembered and followed so that we do not relearn the lesson the hard way.

The dynamic nature of naval aviation, especially with continuous personnel turnover, presents a unique challenge for us to ensure lessons are retained in the corporate knowledge of our trade. Trying to capture all past mishaps and lessons learned to pass to future aircrews is a difficult task. Focusing on the command climate will help commanders and safety officers foster the foundation of the right kind of safety culture. Some suggestions to help accomplish this:

- Don't pay lip-service to safety. Actions speak louder than words. Commanders need to make a positive command-climate safety culture the top priority. Lead by example, talk about safety, conduct safety surveys, and encourage input from all hands for improving unit safety.
- Train as if your life depended on it, because it does. By-the-book training, both for aviators and maintainers, strengthens and develops the safety foundation. After all, our publications have been designed with safety in mind.
- Reinforce safe behavior. Commanders and safety officers should try to get out on the deckplates, every day. Observe your Sailors and Marines in action, at work on the flight line and in the hangar. Praise those who do things by-the-book and work safely, and eradicate any unsafe act immediately — everyone in the unit will quickly take note.
- Set a goal to eliminate repeat mishaps in your unit. Make sure everyone — not just those involved in a mishap or near-miss —understand the true cause of prior events and take steps to mitigate the risk of a repeat performance.
- Thoroughly investigate every mishap, near-miss or identified hazard. Investigate until you find the root cause and effectively mitigate the future risk. Pass those lessons on to sister squadrons and the fleet through *Approach* or *Mech* articles, hazreps, Technical Publication Deficiency Reports, Material Deficiency Reports and NATOPS change recommendations. Strive to cultivate a unit safety culture that talks openly about routine mistakes, past mishaps and near-misses. Don't forget about sharing hazards and mishaps outside of the aviation community. For example, we recently lost two pilots and an H-60 to a "rogue wave" when a ship maneuvered with a turning helo on deck. There were many previous reports of similar hazards and mishaps involving similar circumstances. We must ensure that actions are taken to eliminate repeat mishaps.
- Read your history. Instead of always training on current hazreps and SIRs, take time to delve several years back and choose an incident which didn't happen in recent memory. Revisit old themes. Everyone knows about accidents in the last few years; the ones that have been forgotten are primed to resurface.

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MISHAPS—
AVOIDING REPEAT PERFORMANCES

"Fools learn from experience. I prefer to learn from the experience of others." – Otto von Bismarck

BY MAJ ROB ORR, USMC

Following any naval aviation mishap, the investigators are required to get "answers" and compile them in a report containing a summary, background information, lines of evidence, rejected and accepted causal factors and recommendations. The chain of command chops on reports during the endorsement process, agreeing or disagreeing with the key points, adding additional insight and recommendations, and providing commander's comments. With Class A mishaps especially, the commitment of time and money may be considerable, involving dozens of highly-paid technical experts and leaders, spanning months of fact finding, report writing and endorsing.

Ideally, this same process occurs when a hazard short of a mishap is identified. As warfighters and aviation professionals, we consider this sometimes monumental effort worthwhile since our goal is to prevent a recurrence, thereby preserving our personnel and material assets. In short, it is about saving lives and keeping our aircraft in the fight. Questions naturally follow: Is this process actually working? Are we really learning from all of these mishaps? Are the lessons learned being disseminated and digested, or are they sometimes just today's headline and tomorrow's trash?

Many Safety Investigation Report (SIR) recommendations are directed at agencies such as NAVAIR or model managers, requesting changes or improvements to publications, tools, equipment or training systems. Others address supervisory issues and standard operating procedures, from the squadron level up through USN/USMC-wide mandates. While these recommendations are critically important, this short article won't address these particular benefits of the SIR. Rather, we will discuss the simpler issue of safety through education. It is about sharing the "whats" and "whys" of a mishap, so that we can prevent it from happening again. This is an aviation-safety-officer-level responsibility that can provide training and knowledge to the operators: aircrew, maintainers, air-traffic controllers and ground-support personnel. These people have the most direct impact on our mishap rates.

You may think that a point this obvious is not worth writing about. Of course this information is important and surely it is being distributed. Information moves at light-speed nowadays, and WAMHRS (WESS Aviation Mishaps and Hazards Reporting System) has replaced message traffic. The first recommendation on almost all SIRs and hazreps is to "brief this mishap/hazard to all." From a full-blown multimedia presentation to a basic verbal brief, these education sessions are virtually cost-free, require little preparation by the presenter, and have a captive audience. Despite all of this, indications suggest that the word is not getting out. This situation is evidenced by multiple repeats of similar mishaps, sometimes in a short time span. The recent rash of costly maintenance-related aviation ground mishaps points to this.

Admittedly, when mishaps occur, we can often expect them to have similar "themes." The usual suspects are op tempo, personnel shortages, aging aircraft, decreased flight hours, and human factors. Using this

line of reasoning, it may be inaccurate to measure the effectiveness of our information campaign based on the recurrence of mishap types.

An informal measure of a mishap-information campaign's effectiveness was conducted at the School of Aviation Safety (SAS). Anecdotal evidence provided by numerous members of the SAS staff indicates that the results of our informal survey would be alarming. LCDR Kurt Uhlmann of our staff generated much of this line of reasoning: he thinks that safety information (in the form of mishap and hazard briefs) is not being shared comprehensively, and that the collective memory of our past missteps is too short to prevent the next mishap. What appears to occur all too often is that an aviation safety officer (ASO) student with moderate experience in a particular aircraft is unfamiliar with the circumstances involving recent Class A mishaps in his or her own platform!

When presenting case studies or discussing recent mishaps involving destruction of aircraft and/or fatalities, SAS instructors have received surprising responses: "I'm not really familiar with that one," or "I heard about it, but I don't really know what happened and why." Having interacted with hundreds of ASO students over the last few years, we contend that corporate familiarity with even the "biggest" mishaps has a shelf life of only 2.5 years. A poor sense of aircraft community mishap history contributes to a culture in which we are doomed to repeat our past.

"Insanity: doing the same thing over and over again and expecting different results."

A formal researcher might demand more compelling evidence, but perspective and experience matter. There is sufficient reason to believe we must aggressively promote improving corporate mishap-report knowledge, as it can provide big benefits at little cost.

Tackling this problem requires an appropriate strategy. ASOs often face the challenge of keeping their audiences awake and engaged during safety stand-downs and briefs.

"Are we really learning from our mistakes?"— School of Aviation Safety

They're usually given sufficient latitude by their chain of command but end up regularly asking, "What should we talk about?" and "What will actually be helpful and not be just another check in the block?" Retaining the audience's focus on the safety guy or gal and overcoming

"Those who cannot remember the past are condemned to repeat it." — George Santayana

the mentality of safety as an inconvenience or impediment will always be a challenge for the presenter. We know this condition here at SAS and try to use new and creative ways to overcome this obstacle every day.

Most people would agree that few things grab the attention of their pilots, WSOs, ECMOs, crew chiefs, and maintainers like a good case study. Unlike discussions about concepts and fictional scenarios, these are real aircraft and real people just like those in your unit. They often involve well-trained people with good intentions who ended up in extraordinary circumstances or created unintended consequences. The listener can place themselves in the scenario, follow the story, and witness the sometimes disastrous results. "That could have been one of our aircraft and some of our people, or me. I could see how that happened."

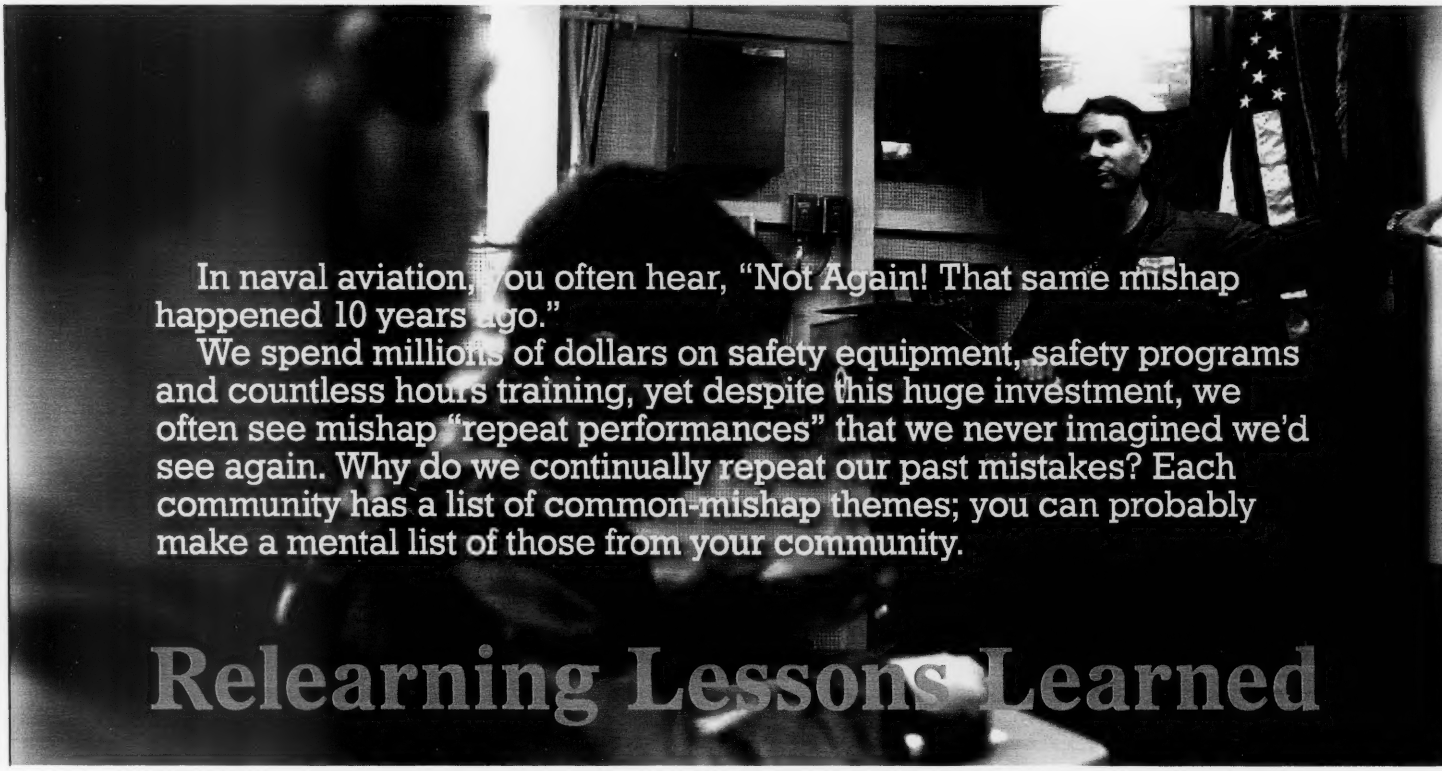
Without scoffing at the mistakes of others and placing blame, the objective is to analyze and discuss examples of what not to do and improve on it. We end up one step closer to learning from our mistakes.

As a side benefit, these presentations can be a valuable training opportunity for junior Marines and Sailors who need to develop skills at research and public speaking.

Information about our mistakes is out there. The NTSB, Naval Safety Center, and SAS staff are good resources for mishap information. ASOs are challenged to find the material and develop creative new ways to present it. Conduct an informal poll of your people and find out if that big mishap from seven years ago still resonates with your aircrew and/or maintenance department. If not, a little recycling may be in order, and you do not need to wait for the next safety stand-down to talk about it.

Digging up the demons of the past will likely do some good. If we can prevent one mishap through an increased emphasis on past mishaps and hazards, then the effort is worth it.

MAJ ORR IS AN INSTRUCTOR AT THE NAVAL SCHOOL OF AVIATION SAFETY. THIS ARTICLE WAS ORIGINALLY PUBLISHED IN "THE SAFETY SIGMA," FALL 2013. THE SCHOOL'S QUARTERLY NEWSLETTER CAN BE VIEWED AT HTTPS://WWW.NETC.NAVY.MIL/NASCWEB/SAS/NEWSLETTERS.HTM.



Relearning Lessons Learned

In naval aviation, you often hear, "Not Again! That same mishap happened 10 years ago."

We spend millions of dollars on safety equipment, safety programs and countless hours training, yet despite this huge investment, we often see mishap "repeat performances" that we never imagined we'd see again. Why do we continually repeat our past mistakes? Each community has a list of common-mishap themes; you can probably make a mental list of those from your community.

Our Aviation Safety Programs' staff here at the Naval Safety Center offers some observations and suggestions for safety promotions aimed at preventing "repeat performance" mishaps.

In most cases, the names and faces have changed and the community "corporate memory" of the past event had long since faded. Why does the story behind the mishap, many times a story that is written with the blood of our squadron mates, fade away? One answer may be found in the way we investigate and discuss our mishaps.

Let's examine our current process:

A mishap occurs, an investigation takes place and a Safety Investigation Report (SIR) is entered into WESS. In the SIR, we have accepted causal factors and recommendations that the Aircraft Mishap Board (AMB) has concluded will help prevent similar mishaps. While the accepted causal factors are important, the recommendations are where we truly expect to influence the culture of naval aviation. Solid recommendations address the accepted causal factors, raise community and fleet awareness, and theoretically have an enduring impact through documented improvements in procedures and training: a NATOPS change, a training syllabus update, or a maintenance publication revision.

Why do solid, well-intentioned recommendations fail to work? Here are a couple of possible reasons:

1. Recommendations with no long-term documented change. "Brief all aircrew" is good but sometimes not good enough to last for the long-haul. If it's that important, a procedural change needs to be made in NATOPS or other publications. Maybe the mishap should be included as part of an introductory safety discussion for all Cat I FRS students in the various communities.

2. Good recommendations come out of the aircraft mishap board (AMB), but they're not fully implemented. Fiscal limitations are the easiest to point a finger at, but oversight by all echelons of the chain of command is required. Accountability and enforcement of recommended corrective actions is critical.

A specific recommendation from a recent aviation Class A ground mishap was never acted upon until a Naval Safety Center survey team identified numerous repeat violations that should have been corrected per the SIR. The issue was identified before we had a repeat event, but where was the follow-up to ensure that corrective action (directed by the SIR recommendation) was completed? As a squadron or wing aviation safety officer (ASO), it is your responsibility to look at all SIRs from your community and make sure your

> *"That men do not learn very much from the lessons of history is the most important of all the lessons of history."* — *Aldous Huxley*

organization is complying with all recommendations.

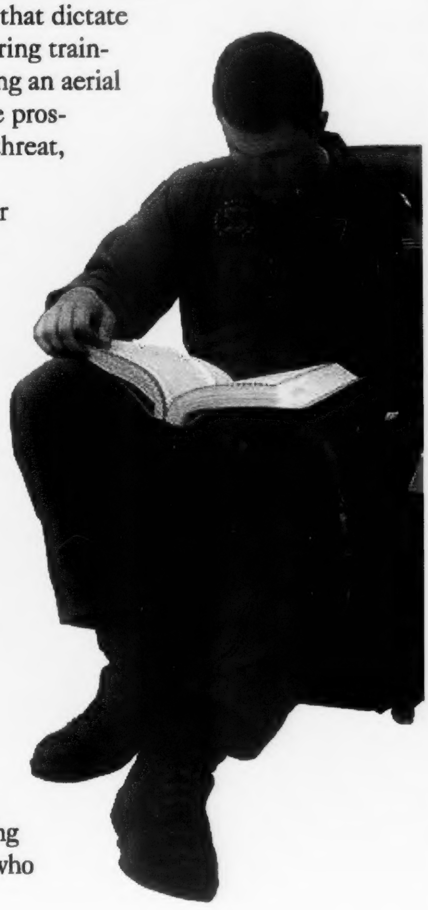
As you read SIRs and hazreps, we challenge you to think about why those mishaps or near-misses happened, and how you can turn the lessons learned from these documents into an enduring lesson for your community.

"History, with all her volumes vast, hath but one page." — Lord Byron

TACAIR

In-depth understanding and adherence to our NATOPS manuals, training directives and tactical publications has assisted today's generation of aircrew to achieve a greater balance between tactical proficiency and systems knowledge. But, as important as in-depth study of the newest tactical recommendations and weapons employment techniques might be, aviators may be missing the reasoning behind the "why" of specific guidance, limitations and training rules.

All TACAIR share and abide by the same rules that dictate safe operations during training. Whether during an aerial engagement or the prosecution of a high-threat, close-air-support attack, the manner in which the aircraft is flown is important to mission execution. The following example shows how an event can change procedures or rules.



On February 15, 1990, an A-4F collided with an FA-18C off the Florida coast, instantly killing the A-4F pilot and severely injuring the FA-18C pilot, who ejected.

On that day, a section of A-4Fs and a section of FA-18Cs had launched on a dissimilar 2 v 2 event. All aircrew were experienced and air-combat-maneuver (ACM) current with no significant histories. The first two intercepts went as planned, but the third was abbreviated due to the fighters (the FA-18Cs) running low on fuel. The fighter lead (FL) "killed" the bandit lead (BL), who then "kill removed" to the south. Then FL turned his attention to the mishap bandit (MB), who was at the mishap fighter's (MF) six o'clock. Fighter lead called, "Fox-2, A-4 chasing the F-18." At this point, the MB broke off his attack and acknowledged the shot.

Realizing that his wingman had reached his RTB fuel state, the FL called, "Knock-it-off" (KIO) over UHF frequency, which was echoed by the BL. When the FL then turned the fighters toward home, with the MF in slightly sucked combat spread to the right, he noticed the MB low and between the fighters traveling from left to right. The MB appeared to be trying to clear the flight. Coming inside the cockpit momentarily to check his instruments, the FL looked out seconds later to see the A-4F in a climb, approaching the rear quarter of the MF. The MF maneuvered his aircraft to avoid the impending collision; however, the maneuver appeared to be matched by the MB, who also seemed to make a last-minute evasive maneuver.

Re-creations of the mishap indicated that the MB, who did not acknowledge the KIO, was trying to engage the FL but had lost situational awareness (SA) to the MF with whom he had previously been engaged.

Because of a recommendation from this mishap, this phrase was added to OPNAV 3710.7: "Knock-it-off calls shall be acknowledged via UHF radio calls by all participating pilots using individual call-signs." Aviators who know "why" a NATOPS procedure or training rule

"History repeats itself because no one was listening the first time." — Anonymous

was written have an understanding that separates them from an aviator that only knows the rules.

Good recommendations and policy are only good if people follow them. If a similar event occurs, we either failed to sufficiently reduce the risk, or a rule violation occurred. Nearly every training rule can be linked to a mishap, but as time passes, the first-hand knowledge

of the mishap is lost, and the understanding of why we have the rule is lost.

Note from the NAVSAFECEN Deputy Commander:

One potental way we could help increase the understanding of why certain rules (and warnings, cautions and notes) exist might be to provide links in NATOPS to summaries of real mishaps, or even the SIRs themselves. Details to incorporating this into our overall NATOPS program remain TBD, and would be subject to many considerations; however, if you think there's value to something like this—or have other related suggestions—please let me know. —Col Glen Butler, glen.butler@navy.mil.

Rotary Wing

Aircraft crashes into water shortly after departing the deck of a destroyer at night.

Aircraft crashes into wires on a low-level route.

Aircraft crashes while pilot attempting to land at a high-altitude landing zone (LZ).

Aircraft crashes while pilot attempting a heavy lift.

Do these mishaps sound familiar? They should, because each of these is an actual mishap that happened within the last 10 years. Were we to create a similar list for 1990 to 2000, it would read almost word-for-word; the same can be said for a list of mishaps back to the dawn of helicopter flight. How often do helicopter pilots hear about mishaps involving power-required exceeding power-available, or those where a crew crashes into terrain, water or wires? These themes comprise an overwhelming majority of helicopter mishaps from all type/model/series. If they are so common, and if we are aware of them, why do they recur?

There is no simple answer to this, but there are a few strong contenders. Let's focus on the lifespan of what we will call "mishap lore." Helicopter pilots are inoculated into the "lore," or story, surrounding a certain incident. When a crew crashes while trying a high-altitude landing without conducting proper power checks, we all become highly attuned to our own high-altitude operations. The pilots who are around when the incident happened learn the lesson and take it with them. The majority of these pilots remain in the community for at least the next eight to 10 years, first as instructors and then as department heads. This situation allows the knowledge to remain "alive."

However, once that timespan is up, most of those pilots leave the fleet or head for other communities or jobs to continue their careers. The community fear of running out of power at high altitude tends to leave with them, with no one is left in the squadrons to pass on the firsthand knowledge or history of that incident. The cycle begins again.

Every pub we read has warnings and charts to inform us. Ink on a page can only do so much to instill the healthy level of concern which will keep us safe, though. The lessons which impact us the most are those that come from our fellow aviators, the guys who can look you in the eye and say, "I was there. That blurb about power checks in NATOPS is no joke. NATOPS is written in blood."

How do we continue to reinforce these simple lessons across generations? It requires effort, pure and simple. Don't limit your all-aircrew training to recent hazreps and SIRs. Delve back into the archives and find something from a decade ago, particularly an event which has not happened again since. It is these old, forgotten themes which are most likely to reemerge. We would rather reinforce them with words, not blood.

E-2 Hawkeye

Although the E-2 has an excellent safety record, it also has had recurring mishaps. Flying around the carrier is inherently dangerous, especially at night or in poor weather. The most dangerous phase of flight is when you are flying close to the water with no external visual references, such as during a night bolter, waveoff or cat shot. Fighting vertigo or disorientation can be difficult under these conditions, and it's at these times when aviators need to bring their scan inside to their instruments and focus on flying the aircraft.

In October 1968, an E-2A flew into the water following a bolter on a night carrier approach. The pilot at the controls was slow to react to the bolter. He failed to get sufficient power back on the plane and the aircraft settled into the water ahead of the ship. The crew was lost.

In August 1985, an E-2 ditched following a night bolter. The pilot at the controls lost SA and did not react to the bolter. He brought the power levers to flight idle and turned off his external lights in response to what he perceived to be a successful arrested landing. The aircraft flew off the end of the landing area and settled into the water, resulting in two fatalities.

In May 1993, an E-2C crashed into the water following a fouled deck wave-off at night. The crew executed the wave-off and began a climb. The aircraft then leveled off and began a shallow descent, ultimately flying into the water.

In August 2007, an E-2C launched off the catapult and shortly thereafter struck the water. The aircraft was involved in Cat. 1 carrier qualifications and had problems with flight-control-system degradations. The crew became distracted and lost SA when they began a descent shortly after takeoff. They impacted the water, resulting in three fatalities.

These very similar incidents occurred within 10 to 15 years of each other. In each instance, the aircraft was flyable and the mishap was the result of a loss of SA or distraction.

Unmanned Aerial Vehicles (UAVs)

The Navy unmanned-aerial-vehicle (UAV) community is still evolving. UAVs represent new capabilities, new modes of operation and new cultures. However, they are not exempt from the same challenges that face manned aviation. Class A mishap rates for UAVs are much higher than for manned aviation.

Just because these systems are remotely piloted does not mean that they are expendable. For example, the Broad Area Maritime Surveillance Demonstrator (BAMS-D) has a 130-foot wingspan and costs $48 million.

Human factors must be considered even if humans

are not in the aircraft. For many UAVs, the number of people required to operate the aircraft and sensors is greater than for similar manned aircraft. This fact has made crew coordination more challenging, and UAV mishap investigations are revealing significant deficiencies in communication and situational awareness. Human factors have been cited as causal in virtually every Navy and Marine Corps UAV Class A mishap to date.

Despite the relatively short history of UAVs, we have already seen repeat mishaps. In December, 2012, an MQ-8B Fire Scout had icing on its return to the ship. The icing developed into airframe vibrations and damage, which caused it to crash. Less than one month later, another Fire Scout also had icing when returning to the ship. In this case the aircraft was recovered but sustained Class B damage.

What this highlights is that UAV crews are just as susceptible to repeating the same hard-learned lessons that manned aviation crews have in the past. Not only do we have to thoroughly investigate, document and brief all UAV incidents, but UAV crews must also stay informed on the safety issues that manned aviation

struggles with, particularly those that involve human factors, ORM and CRM.

Flight Deck Safety – Props and Rotors

Not walking into a turning prop or rotor on the flight deck is common sense, but it happens, and has happened for almost as long as Naval Aviation has been around. In fact, Turner Field in Quantico is named for Colonel Thomas C. Turner, the senior officer in charge of Marine Aviation who was killed in Haiti back in 1931 when he walked into a turning aircraft propeller. Today it is not uncommon for flight-deck crews to work 12 to 14 hours a days on a busy flight deck. Fatigue and complacency can quickly lead to a loss of SA, and just a single misstep can result in death. Many people have lost their lives by walking into turning props or rotor blades:

November 1972 – A chock man walked into a turning prop while attempting to retrieve a glove.

October 1976 - ATAN reacted to loud noise from an engine and stepped into a turning prop.

January 1979 – A blueshirt walked into a turning prop while attempting to chock the aircraft.

November 1987 - During launch prep, a maintainer walked into a turning prop.

April 2000 - Flight-deck crewman died when struck by turning prop.

February 2012 - Ground crewman lost several fingers when inadvertently reaching into turning helicopter tail-rotor blade.

January 2014 - A maintainer ran toward a turning prop of an E-2C. Another maintainer grabbed him and threw him to the deck. Both came within six inches of the turning prop.

Despite all of the training, videos and emphasis on prop-arc awareness, we still have these incidents. Most happen at night when people are fatigued and the flight deck is dark. With many distractions on the flight deck, a quick loss of attention will put you in danger. Experience helps to build SA, but it can also lead to complacency. If you are too tired to do your job, tell your supervisor and get a relief. Keep your head on a swivel and watch out for those who aren't.

PREPARED BY NAVAL SAFETY CENTER AVIATION SAFETY ANALYSTS: LTCOL MICHAEL CUNINGHAM (MARINE LIAISON/ROTARY WING BRANCH HEAD/H-1S); CDR ALBON HEAD (AVIATION OPERATIONS DIVISION HEAD); LCDR JOHN LYNCH (FA-18E/F); MAJ SCOTT SYMONS, USMC (FA-18 A/C/D); MAJ WYNN HODGINS, USMC (AV-8); LCDR JIM LANDIS (H-60); LCDR SHAWN FRAZIER (E-2, C-2, UAV, LSO); LT STEVE WHITEWAY (H-60); LT JAKE EMIG (FA-18 E/F) AND LT KIRSTEN CARLSON (AEROSPACE EXPERIMENTAL PSYCHOLOGY).

VT-4

ENS Benjamin Kosman, a student Naval Flight Officer with VT-4 at NAS Pensacola, Fla., was on his first T-39N training flight. The crew was about 15 miles west of Mobile, Ala., climbing to 28,000 feet.

ENS Kosman saw a small plume of smoke coming from the copilot's window-heating element. He quickly alerted the crew, and the malfunctioning system was secured. ENS Kosman navigated the aircraft back to Pensacola for the landing.

Bravo Zulu

VT-4

ENS Lawrence Wiggins, a student naval aviator with VT-4 at NAS Pensacola, Fla., was on his first, day, low-level training flight.

During the preflight of his T-39N, he noticed a separated electrical wire. One of the six small wires threaded into the nosewheel-steering cannon plug was sheared from the cannon-plug assembly. ENS Wiggins brought the severed wire to the attention of the instructor Naval Flight Officer and civilian maintenance personnel. The wire problem could have caused the nosewheel steering to fail.

The C-20G crew of LCDR Alex Powell, LCDR Erin Pierce, AWFC Francis McLaughlin, and AWF2 Jonathan Myers were en route from Kadena Air Base, Japan, to Paya Lebar Air Base, Singapore.

AT FL450, the pitot static system failed, which resulted in a loss of indications for airspeed (including standby airspeed), altitude and engine-pressure-ratio (EPR) . The crew declared an emergency with Singapore Control. They had to rely on angle of attack (AOA), along with basic pitch and power settings, to make their descent to Paya Lebar Air Base. Crew chief AWFC McLaughlin provided the needed engine settings. LCDRs Powell and Pierce adjusted power and pitch while referencing AOA, allowing for a safe descent in IMC conditions. The flight completed with a full-stop landing.

ENS David Gilson, a student naval aviator with VT-3 at NAS Whiting Field, Fla., was on his initial student solo flight in the T-6B.

Upon lowering the landing gear at Middleton Field in Evergreen, Ala., ENS Gilson heard an abnormal clicking sound. Checking the gear-position indicators, he noted flashing lights, which mean a potentially unsafe right main gear and unlocked main-gear doors. He reported the malfunction to the runway duty officer (RDO) and coordinated a low pass to allow for a visual inspection. The inspection revealed that while the landing gear appeared down, the main inboard gear doors were cycling, a malfunction not covered in the flight manual. A subsequent airborne inspection by another pilot confirmed these indications.

ENS Gilson completed the landing-gear-malfunction checklist and cycled power to the aircraft. He also cycled the landing gear, but to no effect. The gear still appeared down. He returned to Whiting Field and landed. The maintenance inspection revealed a failed landing-gear actuator.

HT-18

LT Jonny Kane and his student, Capt Nicholas Oney, USMC, were on a contact transition flight in the TH-57C from NAS Whiting Field.

LT Kane was demonstrating the first practice autorotation. As they approached the 90-degree position in the pattern, LT Kane realized they risked being blown too far past the field boundary. Per SOP, he immediately initiated a waveoff by lowering the collective and snapping the twist grip to the full open position.

Passing through 350 feet, LT Kane hadn't heard the engine spool up or felt the associated yaw kick. He responded by lowering collective and nosing over to gain Nr and airspeed to extend his glide range. He again brought the twist grip to flight idle and immediately back to full open without any engine response.

The crew cleared the tree line at the field boundary at 100 feet. LT Kane then initiated the flare and final recovery of the full autorotation. As soon as the aircraft touched down and the collective was lowered, the engine spooled up, driving Nr back to 100 percent.

HT-18

LT Dewey Lawson and LTJG Joshua Rice were conducting an early stage contact flight with HT-18 from NAS Whiting Field.

After his third simulated engine failure at altitude while en route to an outlying field, LTJG Rice passed the controls to LT Lawson at 400 feet for a waveoff in accordance with SOP. LT Lawson made sure the collective was full down before bringing the twist grip to full open for a power-on recovery. He immediately recognized something was wrong when he did not hear the engine spool up. Both crewmembers scanned the gauges to ensure they maintained an autorotation profile.

As the aircraft passed through 200 feet, they committed to shooting a full autorotation into the farmer's field beneath them. LT Lawson brought the twist grip to flight idle and immediately back to full open, but the engine did not accelerate.

When LT Lawson began his flare at 100 feet, the engine spontaneously spooled up. He waved off and landed at a nearby outlying field.

What

BY LT ROBERT KERSHNER

I had just recovered onboard USS *Harry S. Truman* (CVN 75) from a night tanker flight in the North Arabian Sea and was being directed around the flight deck prior to getting chocked and chained. Our FA-18 squadron had been deployed for nearly three months, and I was starting to feel comfortable operating around the boat, airborne and on the deck.

The taxi director had taxied us to the base of the island near the junkyard, the area aft of the island in front of the No. 3 aircraft elevator. Based on the position of our aircraft, I could tell that the yellowshirts were intending to push us back with a tow tractor. When I saw the blueshirts approach my jet with a towbar, I squeezed the paddle switch with my right pinky to disengage nosewheel steering (NWS), which was my common practice.

The blueshirts were taking a little longer than usual to hook up the towbar. However, nothing was out of the ordinary until I saw my taxi director give me a familiar hand signal while standing near the left side of my jet's nose. From my vantage point, it looked like the yellowshirt had put his left wand to his nose and then pointed to the right with his right wand. This is the signal given by the directors when they want the pilot to engage NWS to the left. In the second or two that it took me to comply, the hairs stood up on the back of my neck. I knew that personnel were under the nose of my jet trying to hook up the towbar, and the director's action seemed out of place. But, I also thought that if the taxi director was giving me a signal, it was probably for a good reason.

As I pushed the NWS button to engage the nosegear and put in a healthy amount of left rudder, I watched in horror as the 10-foot, 100-pound towbar swung to the left and swept the legs out from under three yellowshirts. After the yellowshirts where pulled clear of the towbar, I complied with my director's signal to recenter the towbar. I quickly disengaged NWS. All I could do was watch as two of the yellowshirts jumped up quickly and the third walked off with some assistance from two other flight-deck crew. The flight-deck personnel hooked the tow tractor to the towbar and pushed my jet backward to a spot where we were chocked and chained.

Later that night, and to my relief, the handler told me that none of the yellowshirts had been injured. He went over the subtle difference between the "engage NWS" and "disengage NWS" hand signals. When I went to our ready room to share my lessons learned with my

squadronmates, I was surprised that most of them were also unclear about the hand signal to disengage nosewheel steering. Most of them confused the disengage-NWS signal with other signals that are associated with towing an aircraft. Like myself, most of the pilots disengage NWS before getting a signal from the director.

THE LESSONS LEARNED from this incident apply to aircrew and the taxi directors. Aircrew need to be familiar with all the hand signals that are given by the taxi directors. Had I been more familiar with the signal to disengage NWS, this entire incident might have been avoided. Also, in varying publications, there are different signals for engaging and disengaging NWS.

The aircraft-handling signal described in the Aircraft Signals NATOPS Manual (NAVAIR 00-80T-113) to engage NWS and direct a left or right turn can easily be misinterpreted with the handling signal to disengage NWS. There is only the slight difference of a horizontal arm and pointed finger (engage NWS) compared to a horizontal arm and a lateral hand wave (disengage NWS) to distinguish between the two commands (Fig. 2-1). The same manual also describes an additional hand signal to direct the engagement and disengagement of NWS by having the plane director touch his nose and then either give the pilot a thumbs up (engage NWS) or sweep the arm downward (disengage NWS) (Fig. 4-3). This additional signal is not only redundant, but it can also be misinterpreted if the plane director drops his arm too quickly after signaling a NWS engagement.

The FA-18 E/F NATOPS Manual, A1-F18EA-NFM-000, describes a third hand signal (Fig. 27-1) for NWS engagement. The plane director signals the pilot to engage NWS and initiate a turn by placing a finger on the right side of his nose for a right turn (left side of his nose for a left turn), while the opposite hand points to the deck.

There are two problems with these published hand signals for NWS engagement and disengagement. First, having three different hand signals to communicate the same command is redundant, confusing and unnecessary. Second, the difference between the engagement and disengagement hand signals are not adequately discernible and can be easily misinterpreted. To clarify this situation, a NATOPS change has been submitted.

Fig. 2-1: Aircraft Signals NATOPS Manual; NAVAIR 00-80T-113

SIGNAL	FROM	TO	EXECUTION
(1)  TILLER BAR IN PLACE OR ENGAGE NOSEWHEEL STEERING	Director	Pilot	Day: Touch end of nose with forefinger. Then, give thumbs up signal with same hand. Night: Touch end of nose with wand. Then, give "up" signal with same wand.
(2)  TILLER BAR REMOVED OR DISENGAGE NOSEWHEEL STEERING	Director	Pilot	Day: Touch end of nose with forefinger. Then, sweep arm downward in direction of aircraft movement. Night: Touch end of nose with wand. Then, sweep wand downward in direction of aircraft movement.

Fig. 4-3: Aircraft Signals NATOPS Manual; NAVAIR 00-80T-113

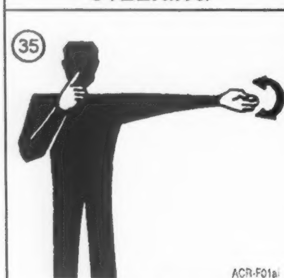
 ENGAGE NOSEGEAR STEERING	Point to nose with index finger while indicating direction of turn with other index finger.	Same as day signal with addition of wands.
 DISENGAGE NOSEGEAR STEERING	Point to nose with index finger, lateral wave with open palm of other hand at shoulder height.	Same as day signal with addition of wands.

Fig. 27-1: FA-18 E/F NATIOPS Manual; A1-F18EA-NFM-000

NOSEGEAR STEERING

RIGHT INDEX FINGER POINTING TO RIGHT SIDE OF NOSE FOR RIGHT TURN AND VICE VERSA FOR LEFT TURN; OPPOSITE HAND POINTING TO NOSEGEAR.

Another issue we highlighted was that hand signals need to be clear and deliberate. As we get further along into cruise, it's easy for the yellowshirts to rush and/or allow their hand signals to become sloppy. Since that night, the hand signals from the directors have been very clear.

If something doesn't seem right, it probably isn't. It didn't seem normal to me that the director wanted me to engage NWS with guys working around the nosegear of my jet. In most cases, there's no harm in waiting for the director to give a signal a second time if the first signal was unclear or doesn't seem right. Remember, we're the ones who are ultimately responsible for the jet when we sign for it.

The final lesson learned came straight from the handler. Under no circumstance will a plane director have the aircrew engage NWS with personnel working around the nosegear. This lesson was a shot to my pride, and I was glad nobody got hurt.

LT KERSHNER FLIES WITH VFA-32

Live Hoisting, Live Rescue

BY LT PATRICK KELLEY-HAUSKE

An aircraft commander must anticipate and prepare for all possible contingencies during a mission. I learned this lesson as a newly designated SH-60B aircraft commander, when an unexpected turn of events occurred during a search-and-rescue (SAR) jump currency flight. We had adequate controls in place to prevent a mishap but learned much for future SAR training and, in particular, operational missions.

We had been scheduled for day and night SAR jumps with an aircraft from a sister squadron. We discussed the safety aspects of aircraft separation and the rescue procedures in case an aircraft could not recover its swimmers. Because we did not have a surface vessel acting as a safety boat, each aircraft provided rescue capability for the other. We also discussed a recent change to HSL-49 operating procedures, which stated live hoisting should be done at 40 feet AGL. Although the lower hover altitude allowed for much more expeditious and safer hoisting, the crew chiefs preferred to remain at 70 feet AGL to avoid large rotor-wash interference.

This altitude criteria was an important decision point during the brief as it represented a deviation from my previous experience during live hoists. Two weeks earlier, I had flown a SAR-jumps currency flight where the same factors were taken into consideration, and we conducted all live hoists at 40 feet AGL. In this case, I went against my better judgment and allowed my crew chiefs to talk me out of the proper procedure. We assessed that our swimmers had the experience to correctly rig themselves and prevent inadvertent free fall, and that the higher altitude was safer if we had a sudden, single-engine malfunction. Although the crew chiefs had vast experience in live hoisting, it was my responsibility as the aircraft commander to execute the flight in accordance with squadron guidance.

The day portion of the flight went as planned. The aircraft was flying well and the weather was cooperating. After refueling and returning to the SAR jump area, we made our first automatic approach for the night, live-hoisting evolution. I was in the left seat and at the controls. My copilot, a senior H2P, was backing me up on altitude during the descent, as well as hover checks once we established a coupled hover. After a steady hover was established, we cleared our crew chief to lower the first swimmer into the water. We had a steady left crosswind and continually corrected for right drift.

The crew chief reported that the second swimmer was ready, and I granted permission to begin lowering. The swimmer gave the appropriate hand signals passing through 20 feet above the water and again at 10 feet. The crew chief conned us into a better position. As the swimmer approached the surface, the right drift correction as well as the height above water resulted in him swinging underneath the aircraft, causing a failure of our radar altimeter (radalt). As designed, the coupled-hover function of the H-60 automatic flight control system (AFCS) will secure if radalt-hold is lost and automatically switch over to barometric-altimeter (baralt) hold. Baralt is not as accurate as radalt, and when the altitude-hold transfers, it immediately causes altitude deviations.

In our case, we rapidly descended 10 feet. As the pilot at controls, I increased collective to correct. For the swimmer below, this sequence of events can be violent. The altitude loss most likely will dunk swimmers in the water, and depending on the pilot's correction, they may be yanked back out of the water. Being pulled from the water can be particularly harmful because of the water resistance and possible cable entanglement, which can lead to severe injury. Our crew chief was experienced in this scenario from many prior practice jumps. When he recognized the altitude loss, he immediately anticipated a pilot correction. He tried to shear

the rescue hoist to avoid injury to the swimmer. He broke the shear-wire securing the switch; however, we had steadied out the aircraft before he could actuate the shear system.

With the swimmer signaling OK, we checked that radalt-hold was reengaged. We decided as a crew that it was safe to continue the evolution. As we were once again conned into position via the crew chief's calls, the swimmer again swung underneath the aircraft and into the beam of the radalt, again causing it to fail. The aircraft again dropped 10 feet. The crew chief sheared the hoist.

With our aircraft no longer SAR-capable, we marked the position of the survivors and transitioned to forward flight. We alerted our playmate, who subsequently recovered both uninjured personnel from the water. With all personnel accounted for, we headed home, landed and debriefed.

We had many takeaways that apply to live hoisting. The first is the justification behind the 40-foot-hover altitude for live hoisting. While everyone is familiar with the inadvertent free-fall hazard during hoisting, our crew chief had confidence in the experience level of the swimmers, and we trusted they would properly hook up to the hoist. As we learned, the rescue swimmer may fall due to no fault of his own from a sheared hoist. We also learned the hard way the need to conduct live hoisting at 40 feet AGL as published by the standardization board.

We gained experience on how to better respond to the NATOPS warning regarding the injury to the swimmer if radalt-hold fails. NATOPS warns not to make any large or abrupt control inputs; however, it may be advisable to brief only stabilizing the aircraft at the altitude you descend to, rather than correcting to the original altitude. Stabilize the aircraft, communicate to the crew chief when steady, and reset to hoisting altitude once the swimmer is OK and not at risk of sudden jerking motions or cable entanglement.

Finally, this event illustrates to aircraft commanders the necessity of a backup plan in case of an actual SAR. While engine or transmission failures are certainly possible, a radalt-hold failure is much more likely. It can easily result in a stranded swimmer as well as survivors. Requesting additional assets is important, even for simple rescues under ideal conditions. You may suddenly find yourself not SAR-capable because of the actions of your experienced crew.

LT KELLEY-HAUSKE FLIES WITH HSL-49.

Kermit the FOD

BY LTJG NICHOLAS VLASAK

An integral component of any flight is the preflight inspection. As familiarity and experience with the aircraft increases, we tend to develop a consistent and methodical flow to identify what is, and what is not, normal with our aircraft. Discrepancies such as low fluid levels, excessive leakage, inoperative lighting, and broken slip marks are easily spotted. Prefights can become routine. As I recently discovered, however, the not-so-obvious or unexpected can occasionally make a preflight far from ordinary.

As a flight student in the advanced rotary syllabus, I was scheduled to fly my fifth flight in the TH-57B. Everything from the brief to aircraft assignment was routine. As my instructor pilot (IP) and I arrived at the aircraft, we divided up the preflight responsibilities as per our brief.

We soon discovered three green tree frogs on the outside of the lower fuselage. Wait a minute! I know my NATOPS manual quite well, and it mentions nothing about checking for frogs. However, it turns out that during the spring and summer months in northwest Florida, small frogs are known for making TW-5 aircraft their temporary home to evade the heat and stay cool. This day offered a particularly good incentive for frogs to hide in the aircraft because it was hot and humid.

We continued our preflight inspection and my instructor noticed another frog between the engine heat shield and air-transfer tube. Not a big deal at this point; the IP simply removed the frog and continued on with his inspection. Taking no chances, my IP told me to check the engine intake to ensure no frogs were hiding in there. I discovered a green, dime-sized head poking out of the compressor-inlet section.

"Sir, you guessed right, there is a frog in here," I yelled. He replied with an expletive.

We called our contract maintenance folks, who quickly came to assist us. When the maintainer asked, "What seems to be the problem?" We stifled a chuckle and said, "Well, we got a frog hiding out in our compressor."

As a look of disbelief set in on the maintainer's face, you could tell that he had to personally verify the claim. "Yep, that's a frog alright," he said.

Having found a frog in the compressor intake, our next task was to remove it. After 10 minutes of trying to pry the little guy out with a rod, we had the frog cornered, but he was still determined to stay. Along with the maintainer's amusing phobia of frogs, the engine-intake screen further prevented our attempts to extricate our friendly amphibian.

Growing desperate, our maintainer said, "I know what to do, I'll spray him with a water hose."

Splash!

Along with the torrent of high-pressure water, not one, or two, but three green tree frogs came washing out. I thought, "You have to be kidding me. Three frogs all together, and we barely saw the first frog. What are the odds? Do you think there could be more frogs hiding out?"

We decided to reassess our preflight ORM brief. The increased chances of a compressor stall from a FODed engine could affect our training mission. To cover all of the bases, we decided to invest more time in the preflight and enlist the help of additional maintainers to make sure the aircraft was no longer frog infested. This action reduced the risk of the frog-FOD hazard and made us both comfortable with flying the aircraft. Ultimately, we completed the "hop" (get it?) with no issues.

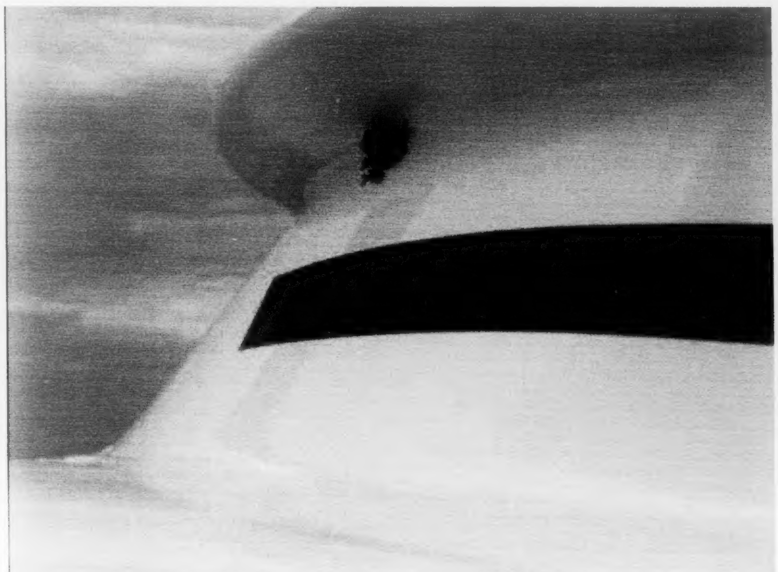
Every situation or procedure is not covered in a manual or SOP. Personal experience and the shared experiences of others help to fill those gaps that are not covered through text. At that particular time, I had only completed a few preflight inspections, and my familiarization and experience was minimal.

My methodical flow of preflight inspections was still riddled with this question: "Is this normal, sir?"

I learned to take extra time to inspect those smaller and/or harder-to-see areas that could be hiding places for wildlife, leaves or nests

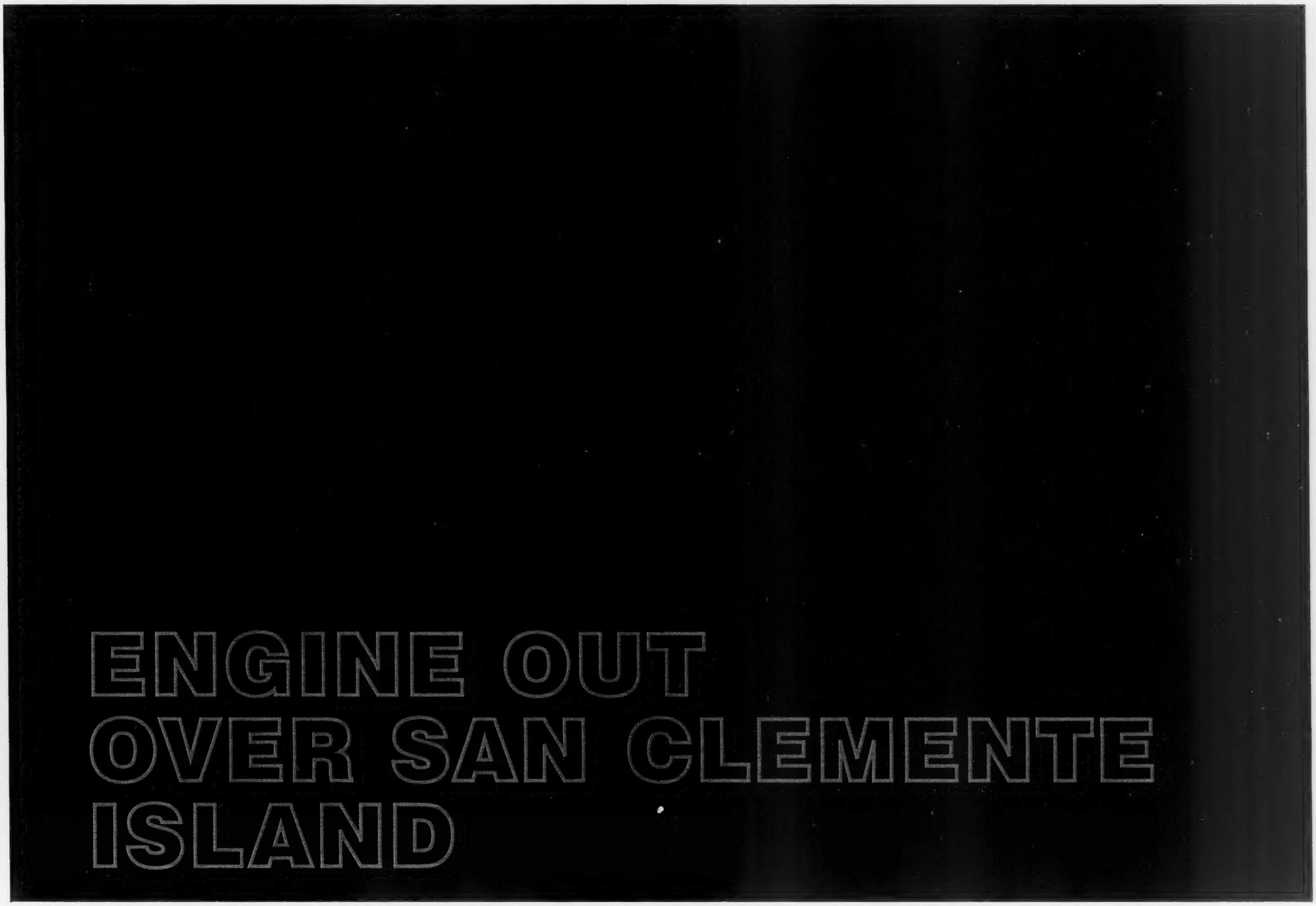
Note: No frogs were harmed during the preflight inspection.

LTJG VLASAK IS A STUDENT PILOT AT HT-18.



Mishap-Free Milestones

VRC-30	207,000 hours
VFA-131	110,000 hours



ENGINE OUT OVER SAN CLEMENTE ISLAND

BY LT ROBERT STEINER

The aircraft descended toward runway 23 at San Clemente Island, just above safe single-engine speed. This was not a usual profile for an MH-60S, and this was no routine landing. Usually, a landing at San Clemente Island is for extra fuel after a long training flight before heading home to NAS North Island.

Under the glare shield glowed the yellow No. 1 ENG OUT caution light. As the mainmounts touched down, the glow disappeared, but spinning red lights still illuminated the taxiway as the crash crew stood by. They followed the aircraft down the runway from along the taxiway.

Here's how I got there. The day had started like any other. I came in early to finish the last-minute preparations for the flight, staple the smart packs together, read the aircraft discrepancy book, and put the finishing touches on the brief. The mission was close-air-support (CAS) training, 70 miles to the west, off the coast of San Diego.

Today was to be a valuable day of training for HSC-8. Laser ranges are scheduled far in advance, and the next opportunity for training like this was uncertain. With the federal budget still undecided, no one knew how many hours we would fly in the next fiscal quarter. It might be the last opportunity for our pilots to train toward their anti-surface warfare level III (ASUW3) qualification. Today would also be more valuable because we were operating with a real joint-terminal-attack controller (JTAC) on the ground, directing our simulated AGM-114K Hellfire missile shots.

As the 75-minute brief came to an end and the final questions were wrapped up, the crews finished their NATOPS brief. The plan was set, the mission cards were burned, the crews were ready, and we headed to the flight line. A captive-air-training missile (CATM) was mounted to the starboard side of each aircraft, an important part of our close-air-support training mission. It would give us

indications in the cockpit from our laser rangefinder designator (LRD), allowing the Hellfire missile's seeker-head to know exactly where it needed to direct the ordnance.

Flying in Dash 2, we received clearance from tower for takeoff, taxied onto the pad, and made a final check of the engine instruments. Everything was ready, and as lead called "10 seconds" over the radio for our dual-aircraft takeoff, the aircraft commander pulled in power early to beat the lead aircraft off the ground. His intent was to avoid the main rotor downwash from the aircraft ahead of us. The ground shrank beneath us, and we headed in tight formation down the channel out of San Diego Bay. We switched radio frequencies and prepared for our transit to San Clemente Island.

"Diablo, this is Loosefoot 11 and flight," we called. No response.

"Don't worry, I'm sure we will be in comms once we make it over that ridge," we said to the other aircraft over our squadron's tactical frequency. One of the disadvantages of helicopters that always fly low and behind terrain is the lack of radio reception.

The island came into view on the forward-looking infrared (FLIR) and combat checks were complete. Time to get things started.

"Diablo, this is Loosefoot 11 and flight," we called.

"Loosefoot flight, this is Diablo, standby for SITREP. There's a concentration of simulated enemy troops located along a ridgeline near small buildings with heavy armored vehicles and small arms, perfect targets for Hellfire missiles. Proceed direct Holding Area Sally and stand by for 9-line."

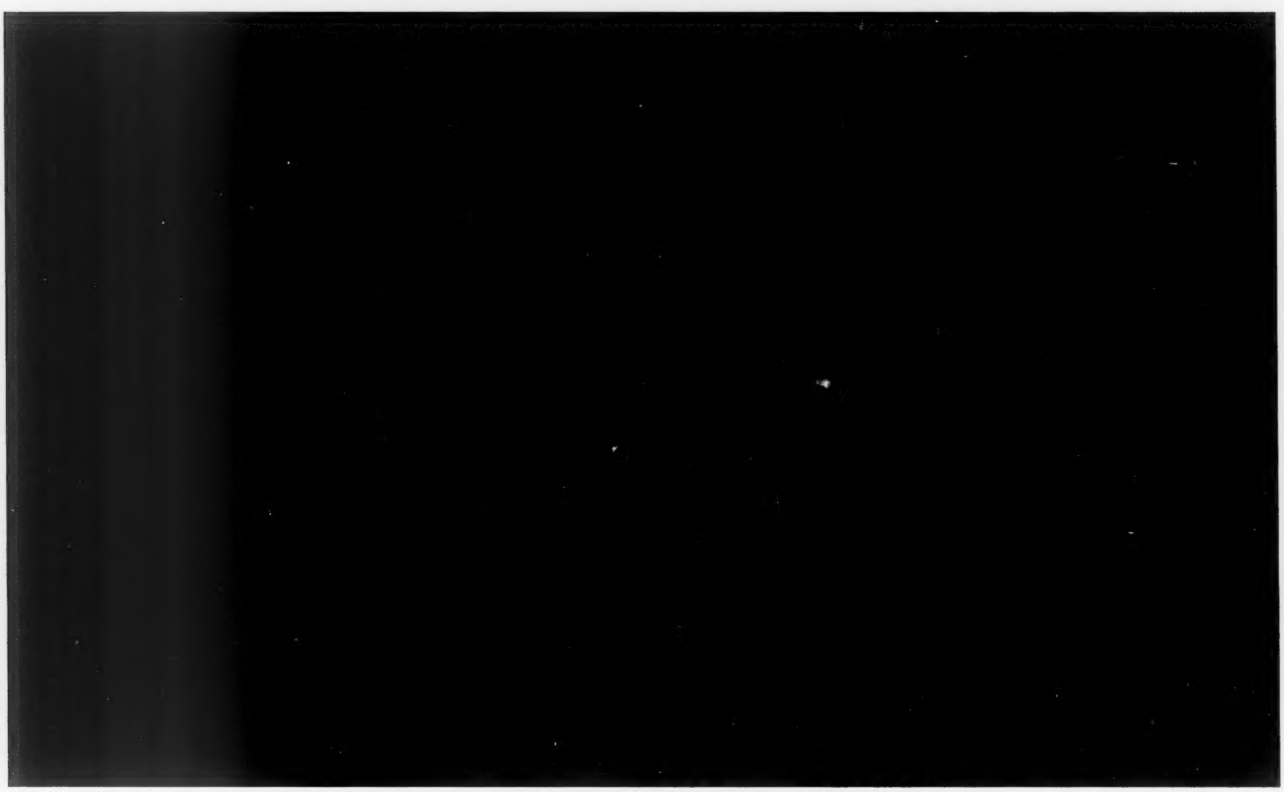
The mission commander scribbled down instructions from the JTAC onto his kneeboard and prepared a plan. The section attack brief would be given, and we'd be ready for target acquisition. We pushed toward the battle position where we would release our simulated attack on the enemy.

Every second is valuable when the ordnance needs to hit the target at a precise moment.

"Twenty-two seconds to push time," came over the radio.

"I concur," I announced, "push time of three five four two."

We headed inbound to the target, sensors aimed and laser's armed. "Ten seconds," came over the radio. It was time to lase the target.



"Spot, solid box, no constraints, rifle away, time of flight sixteen seconds." No missile came off the rail on this flight, but all the indications were there for a good shot.

"Impact, terminate. Loosefoot flight pull right." The island slid across the windscreen, as I saw the target disappear from my mission display.

The pilot at the controls looked down and inquisitively alerted the crew to an advisory on his display. "Ng is in the twelve second range," he said, as he switched his scan to the engine instruments to diagnose the issue.

WE LEVELED OFF at safe single-engine airspeed. Our compressor turbine was pegged at maximum; something was obviously wrong. For a split-second my stomach dropped, and then instinct kicked-in as my eyes scanned the rest of the instruments. Nothing else was out of the ordinary, and we agreed that we had indications of a digital-engine-control malfunction.

The next step was to pull the No. 1 engine power-control lever (PCL) out of the fly detent to bring the overspeed condition into control. We concurred on the No. 1 engine PCL, and I pulled it halfway back to the six o'clock position, reducing fuel flow to our engine. Ng was still in the red range, and our torque indications dropped below 20 percent.

"Not enough," I thought. My helicopter aircraft commander (HAC) thought the same thing. He said, "Pull it back a little bit more."

I slowly slid the PCL back nearer to the idle detent. "Ng is in the green," I announced. "Let's turn north along the west side of the island for a precautionary landing at San Clemente Island NALF."

We were in a safe flight regime with a single engine. We called our lead aircraft, made them aware of the situation and told them that we had it under control. They slid back and perched above us as we headed north.

"It looks like you have smoke coming from your No. 1 engine," we heard over the radio.

"Fantastic," I sarcastically thought. We started a slow climb away from the water and terrain to a higher altitude and finished the checklist for our malfunction.

As we gained altitude, we noticed the oil pressure drop from 50 to 30 psi. It would soon be in the precautionary range.

"Time to shut off the No. 1 engine," my HAC announced to the crew.

The crew chief didn't miss a beat and spoke up: "I've got it, sir. Page two, tac two, Engine Shutdown in Flight Procedure!"

We began to execute the steps, and as I pulled the PCL to the OFF detent, the engine spooled down, temperature indications began to drop. The No. 1 ENG OUT caution light illuminated.

"There isn't smoke coming from the engine anymore," we heard over the radio. It's not every day you pull a PCL to the OFF position at 1,000 feet above the ground.

" … mente tower, this is Loosefoot 613 and flight declaring an emergency."

I heard half of the transmission over the radio as I switched to tower frequency. Close behind us was our skipper in the other aircraft, backing us up and making radio calls for our landing.

As we got closer to the airfield, our HAC maintained a calm demeanor, set up the plan and announced it to the crew. "Alright guys, we are flying just fine right now. We have a road right below us in case anything else happens, we have our clearance to land, and we will be making a running landing at safe single-engine airspeed."

I referenced my preflight calculations and updated them based on our weight. I replied, "We have a safe power margin above 30 knots."

As we approached the runway, the fire truck and ambulance stood by at the approach end of the runway, ready for the worst but hoping for the best. The crash crews probably didn't know what was happening in our aircraft. We rolled on final and settled into ground effect, almost safe on deck.

After landing, it turned out that the malfunction had caused a rupture somewhere in the oil system. The smoke coming from the engine was oil burning near the hot engine exhaust. The drop in oil pressure was due to the leak, and oil was slicked across the port side of the aircraft just below the engine cowling. The engine-oil sight gauge was empty, and oil was pooled in the lowest part of the compartment. If we had not recognized the overspeed when we did, it could have been much worse.

Handling a situation like this, although nerve-racking at the time, brings a sense of confidence. It also shows the importance of crew resource management (CRM), training and the value of simulators. Exposure to emergency procedures that you cannot duplicate in the aircraft is invaluable training. In a time of budget uncertainty, making the most out of our limited simulator hours is critical to proficiency. Although faced with an emergency, the entire crew knew their roles. We immediately acted as a team.

LT STEINER FLIES WITH HSC-8.

TACAMO Gone Fishin'

BY LT KRISTOPHER HODGES

It was the beginning of another deployment, and the flight was our crew's first wire-out mission. Our flight profile was standard: Take off from Offutt AFB, fly about four hours to the operating area in the Gulf of Mexico, trail the wire out the back of the E-6B for an hour or so, and have a leisurely 3-to-4-hour flight back to Offutt.

When we arrived at the operating area at 20,000 feet the weather was perfect, so I sat this one out and let my 3P and 2P run the mission. Even though I had complete confidence in their abilities, I listened on ICS from the crew-rest area, just in case they ran into any issues. It wasn't long before I noticed an out-of-place silence. Just as I started to think something might be wrong, my flight engineer dropped the bomb.

"We're gonna have to cut it," he called.

I got up to see what had happened. Before I could get to the flight deck, my flight engineer met me on his way back to the reel operator's station, which is located in the back of the airplane. I asked him how bad it was, but all he could do was shake his head. When we got to the reel station there was no question we had a problem. It looked like the wire had jammed up somewhere, and the reel continued to unspool. It created a bird's nest of messy, mangled and knotted metal wire. We had a lot of wire extended, and with the reel as screwed up as it was, there was no way we could get it back in the aircraft. It was unanimous that we would have to cut it.

As disappointing as it was from an operational standpoint to lose the wire and scrub the remainder of the mission, we weren't too worried. Normally, losing a wire means writing a things-falling-off-aircraft (TFOA) report and a trip back to Tinker to get fixed. The aircraft's reel system is equipped with an automatic and a manual cutter system for situations like this.

I went to the flight deck, jumped in the left seat, and we started running through the checklist to cut the wire. We made a thorough surface sweep with the weather radar for any oil rigs or tankers, found an open area, and told the reel operator to cut it. My 2P, FE and I all stared at the wire indications, expecting to see the length or tension go to zero.

"Reels, flight. What's going on back there?"

"Flight, reels. The cutters didn't fire, let me try again … it's not working, try your panel."

I tried the cutter panel by the pilot's seat — nothing. My 2P tried his panel — nothing.

"Reels, flight. It's not working. Try the T-handle."

The reel operator tried the manual cutter T-handle and, of course, nothing happened.

He cautiously increased the pressure until the cutters finally snapped closed, and then, nothing.

We were quickly running out of options, but after some discussion, I decided to let the reel operator go "old school" on the wire. This meant he'd use bolt cutters from the tool box — essentially our last resort. Even though our stress levels were starting to rise, we were confident it would work. I was mostly concerned for the reel operator's safety, because we've all seen what happens when tightly stretched wire or rope suddenly snaps. The ends could whip around and seriously injure him or damage the aircraft.

I was on the flight deck when he tried to cut the wire, so I could only imagine the look on his face: His head turned away, one eye squinted shut, and his face grimaced in anticipation of the force about to be released. He cautiously increased the pressure until the cutters finally snapped closed, and then, nothing. There was no violent sound of wire whipping on metal, no grinding or scraping as the frayed end is pulled by the airstream through the back of the aircraft, just two ends of a newly cut wire laying loosely on the deck, as if they weren't under any tension, which they weren't

"Uh ... flight, reels. Sir, I cut the wire ... it's still attached."

There was a silent pause as we realized the gravity of the situation unfolding around us. We were at 20,000 feet, trailing a lot of wire with a 50-pound drogue at the end of it, and we had no way to get rid of it. At that moment we all went from slightly stressed to, "Houston, we have a problem!"

I glanced at our fuel state. We had plenty of fuel

to hang out for a couple hours while we tried to figure this out. I told my 2P and 3P to run bingo numbers for Tinker and Navy Corpus. My FE and I went back to the reel station to see what we were working with. In short, it wasn't good. The reel operator tried to trace the wire back as far aft in the aircraft as he could to find where it had jammed. He determined that it had to be jammed somewhere on the drogue arm itself, external to the aircraft. There was no way to get to it in flight. The only way that wire was going to release was if some external force physically ripped it from the aircraft.

Fortunately, we had fuel, which gave us time to brainstorm. We also had good comms with home base, so I called Tinker on the "bat phone" and passed them our situation. I told them to gather all the pilots, flight engineers (FEs), and reel operators they could find and come up with some bright ideas. We also needed some options to land away from populated places in case nothing worked.

We thought we could shake the wire loose by deploying the speedbrakes, which produce substantial airframe buffet, or by rapidly rolling back and forth. Another option was to snap it off by inducing negative then rapid positive G's to whip out the jam. The think tank back at Tinker suggested that we repeatedly open and close the drogue-arm doors, which might fray or weaken the wire enough for it to snap. They also suggested either Kingsville or Navy Corpus as possible places to land with the wire out, as the approach to runway 13R at Corpus keeps you over the water for most of the final approach, and the approaches to 31 at Kingsville are over rural areas.

We decided to try the door-cutting method first. We figured if it didn't weaken the wire enough for it to fall off on its own, we could try the other ideas to help it out. As we desperately tried all possible options, with no success, the thought of landing with the wire still attached became more and more real. I started to visualize what would happen as the drogue first hit the ground. Would it stay attached or would it break off? If it broke off, how would it break off? Would it break at the end of the drogue, leaving the wire still attached to the aircraft, or would it break where the wire attaches to the aircraft? The more I thought about it, the more I realized whatever happened was inevitable. The drogue would hit the ground while the aircraft was still airborne, and would cause significant damage to whatever it hit. My focus shifted to figuring out how we could minimize this damage.

Based on the considerable length of exposed wire and our understanding of how it normally behaves, we calculated the drogue was hanging somewhere between 500 to 800 feet below us, trailing well behind. On a straight-in approach, it would hit a considerable distance short of the runway, just moments before landing. Not the ideal spot.

Then I thought, "I wonder what would happen if we just dragged the wire through the water out here in the ocean?"

There were a lot of unknown variables to this problem, but the one thing we could control was where the drogue would first impact. At first I dismissed this plan as too radical, but the more I thought about it, the more apparent it became that none of our other ideas were going to work; I figured I should at least bring it up to the crew for discussion. The plan was received better than I expected. The fact that there weren't really any other options probably had something to do with that. We discussed all of the possible hazards with this "trolling" maneuver. I'm talking about operational risk management (ORM) like you read about.

What if the wire didn't break off? What if the drogue broke off, but the wire didn't? What if the force from the wire damaged part of the airframe? What might that damage be? How might that affect our flight controls? Don't forget that we'd be flying a heavy 707 only 500 feet over the water. Not that it would be impossible, but the E-6 wasn't exactly designed to do low levels. I brought up this idea to the think tank at Tinker to see what they thought. It took them a little while, but they called us back and agreed that it was a viable option and definitely worth considering. We were getting to the point where if we didn't do something soon we would start burning through our divert options. I made the decision to give our plan a shot. I gave Tinker one last call on the bat phone and told them we were going to try the trolling maneuver.

We decided to fly it like a low approach. We would configure full flaps, keep the gear up and slow to approach speed. We set 500 feet as our go-around point

whether the wire had hit or not. I also didn't want to be hanging out with the wire in the water for long, so I briefed we would go-around at the first sign of impact no matter what the altitude. We had planned, briefed and prepared the best we could, and the atmosphere on the flight deck was jovial. It was mostly our way to lighten the mood before we attempted to do something that had never been done before.

We continued the descent to 1,000 feet and configured the jet. From 1,000 feet on we took it nice and slow, 100 feet at a time, no more than 100 feet per min. I was completely focused on my airspeed and radio altimeter, my 2P kept scanning outside for ships, and my FE was focused on wire indication for any signs of impact. Meanwhile, the reel operator was at his station watching the wire from the drogue arm camera. At about 700 feet, the GPWS started going off.

"Terrain. Terrain. Pull up!"

Just then the reel operator shouted over ICS, "It's in the water!"

The drogue was too far behind the aircraft for him to see from the camera, but as it started to skim the surface it made a giant splash, which he could easily see.

"Go around!"

As we advanced the throttles and pitched up to climb away, the extra oomph from the engines was enough to break the wire right at the end of the drogue arm.

"Flight, reels. It worked, the wire is gone."

We cleaned up the aircraft and started to climb. I took another look at our fuel. Just as we had planned, we were right at our bingo to Tinker. We contacted Houston Center and picked up our IFR clearance to RTB. The relief we felt was indescribable. We were headed home with a good jet when only moments earlier we were faced with what seemed like an impossible situation, which we were almost certain would lead to a mishap.

We landed at Tinker and found where the wire had jammed. It had knotted itself on the end of the drogue arm. It would have been impossible to remove it in any other way than the way we did.

LT HODGES FLIES WITH VQ-4.

Don't Be that ENSIGN

BY ENS NATHAN WINDHORST

We all have our share of firsts: first day at a new command, first flight, first pre-flight brief, first time being called into a LCDR's office. These firsts seem straightforward, exciting even (except for that last one).

This was my first day on the flight side at VT-10, and I had my first preflight brief as a student Naval Flight Officer in 10 minutes. Sitting in the student ready room, doing a last minute review of weather and discussion items, my concentration was broken by a call from the doorway, "Ensign Windhorst."

I was oblivious to the horror that swept the ready room; I was the only one who didn't recognize the lieutenant commander. This changed however, as I followed him into the Safety/NATOPS office — he was the safety officer.

Stopping at his desk, he turned to me and asked, "Do you know what these are?"

In his hand were shiny metal objects on a chain. They were dog tags, and they had my name on them. The same dog tags that were supposed to be in the shoulder pocket of my flight suit, and the same dog tags that I was supposed to be wearing for my first flight in a few minutes.

I was baffled as to how my dog tags ended up in the possession of the safety officer. After a brief discussion, I learned that they were found in the cockpit of the T-6 that my class had used for a cockpit familiarization the day prior. The tags had fallen out of my shoulder pocket because I'd apparently left the zipper open. I left that office hating myself for making such a stupid mistake — even before I had logged one flight hour. I continued to my brief, but my flight was cancelled for weather. The rest of the day went on without a hitch, and I thought my experience with FOD was over.

The next day, I walked out to the plane with my instructor to begin our exterior inspection. I made

I was baffled as to how my dog tags ended up in the possession of the safety officer.

sure that my dog tags were secure around my neck and that my ear plugs were stowed in my shoulder pocket, which was zipped. After our trip around our plane, ending where we started, I noticed two bright orange objects on the deck. They looked like earplugs. They looked just like the earplugs that were currently in my pocket. But when I checked, I found that my pocket was empty.

I quickly silenced my inner panic at my second case of FOD in two days and focused on my flight. After landing and passing my flight, I was taking my gear off when a fellow student pointed out a string hanging off my flight suit — from the same pocket as my FOD incident. It turned out that the back half of my shoulder pocket was torn from my flight suit, opening a hole for everything to fall out. I had finally found the source of my FOD problem.

I learned quite a few things only a few short days into my flying career. For one, all those stories I heard about FOD in the cockpit, such as dropped pens causing pocket checklists (PCLs) to become stuck, are more likely to happen than I had thought. Even if you are careful, the unexpected can still happen.

Preflighting of gear pertains to clothing as well. I now make it a habit to know what I have in my pockets at all times and periodically check to make sure it's still there.

I went an entire weekend assuming my dog tags were in my flight suit, only to see them in the possession of the safety officer that Monday. I also assumed that I first lost them because my pocket was unzipped. Never assume.

Learn from my mistake, and don't be "that ensign."

ENS WINDHORST FLIES WITH VT-10.

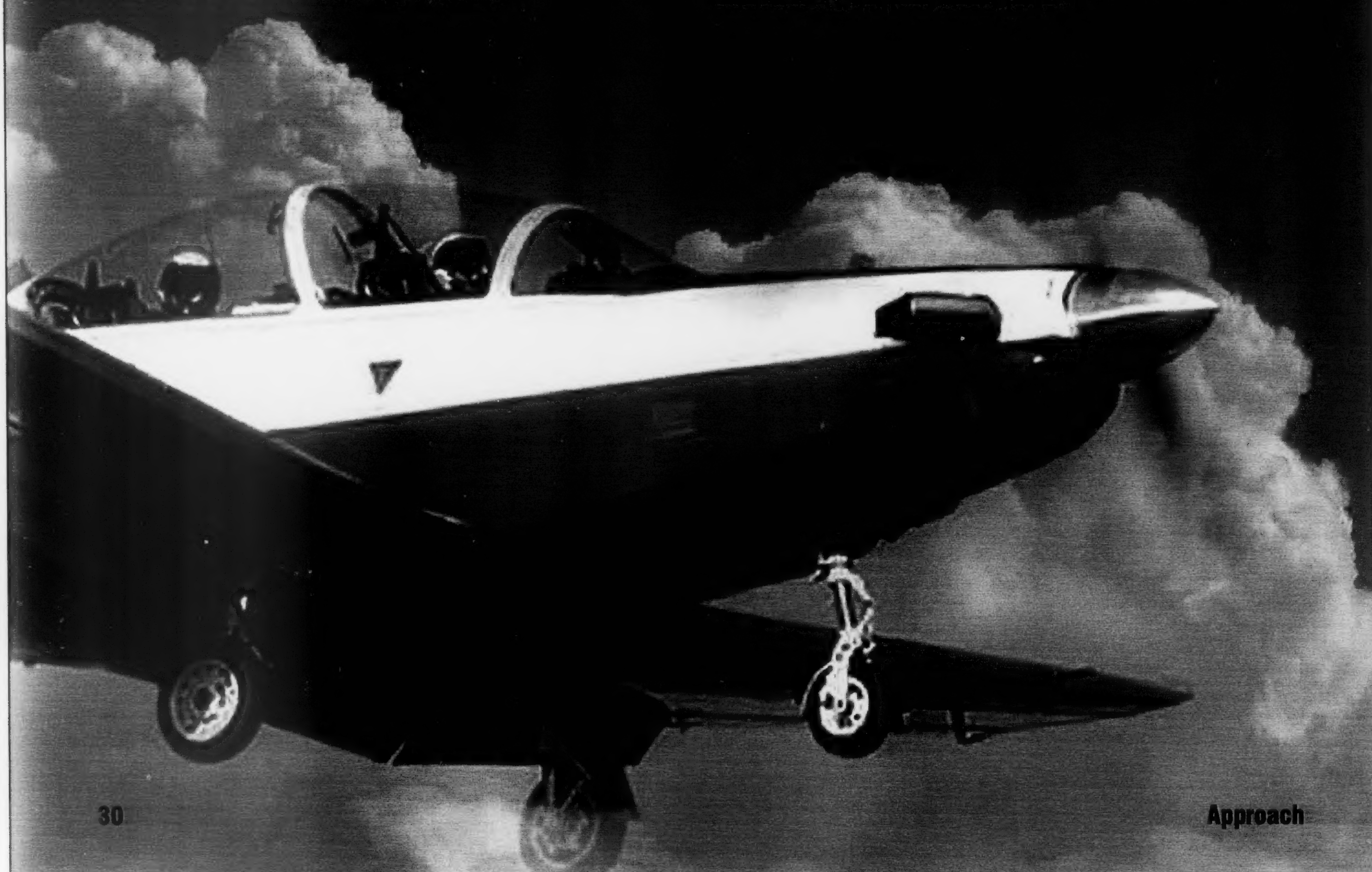
Two and a Half Minutes

BY LT PATRICK CADORET

It was yet another blistering hot day on the Florida Panhandle. I was scheduled to fly an initial, contact safe-for-solo flight. These rides are not my favorite events because the students are generally very nervous for their first evaluation flight. Things have a tendency to get interesting when nervousness affects their situational awareness. I still remember how nervous I was for my first check ride.

However, my student appeared to be well-prepared and the ground-evaluation portion went well. At step time I felt optimistic that he'd have a good flight and that I might even have him back in time to solo later that afternoon.

We were issued aircraft 061, a reasonably new T-6B Texan II. We took off from NAS Whiting field for the Pensacola North military operating area (MOA). The event went well, including the touch-and-goes at Middleton Field Airport (Evergreen OLF). I evaluated my student's ability to handle in-flight emergencies and precautionary landings. After our pattern work, I felt confident he could solo and do well at the OLF. The only thing left for me to evaluate was his ability to intercept visual course rules and fly back to home field.



I told my student that I had seen enough and it was time to go home. We made our way to course rules near Castleberry, Ala. Turning south toward Florida, we felt the gut-sickening feeling of an uncommanded loss of power. I felt my body project forward, like when you quickly apply the brakes in your car. I thought that my student had nervously slammed the power-control lever (PCL) to idle, anticipating leveling off at altitude. However, I quickly realized that wasn't the case when the loss of power was followed by a warning tone and a master warning light. I checked the engine indications and saw the interstage turbine temperature (ITT) was out of normal limits. A red CHECK ENGINE annunciator was illuminated on the engine indication and crew alerting system (EICAS) display.

It was clear that I would not make the altitude required for a normal profile for a precautionary-emergency-landing.

I took the controls and began a climbing turn toward Middleton Field Airport (Evergreen OLF). For a moment during the zoom/glide maneuver, the engine instruments had normal readings. I thought the problem might clear up and let us get home. It might have been another one of those "phantom warnings" that plague the T-6B and have prompted several hazreps. That thought was short-lived, because seconds later the ITT again started increasing out of limits as torque decreased.

I began to retard the PCL to bring ITT back into limits. Once the PCL was at idle and with ITT still out of limits, I directed the student — sitting in the front seat where most of the switches that control the engine are located — to set the power-management-unit (PMU) switch to off in accordance with the Uncommanded Loss of Power emergency procedure. This had no effect on the engine indications.

After about 10 seconds, I directed the student to set the PMU switch back to norm. Again, this had no effect. Engine performance continued decreasing with ITT increasing. Torque was decreasing and eventually remained stable at 15 to 20 percent. ITT remained between 830 and 958 degrees Celsius.

I began to evaluate my options. I was pointed toward Evergreen, which appeared to be my only viable option if I was going to land. Looking at the field, I blurted a couple of choice words as I took note of how far I was from the runway. Facing a never-before-seen emergency in the T-6B, I tried to recall from NATOPS which malfunction most closely resembled these engine indications. I decided I was faced with an Uncommanded Loss of Power and again directed my student to set the PMU switch to off.

I had flown P-3s in the fleet, a plane not equipped with ejection seats. Until that point, I had not fully come to terms with the idea of ejecting, and I was thinking that today could be that day. I questioned if I had strapped-in this morning but quickly reminded myself that the strap-in is a checklist item — I needn't worry about that.

As we got closer to the field, I declared an emergency and requested that the runway duty officer (RDO) direct all other traffic to clear the runway and depart the airfield. The engine was now producing minimum power. It was clear that I would not make the altitude required for a normal profile for a precautionary-emergency-landing profile.

At the onset of the malfunction, I could only climb to about 5,000 feet at five miles from the runway. With this in mind, I told the RDO that I would try to intercept a straight-in, forced-landing profile to the inactive runway. I was able to intercept at short final, landed, and shut down the engine on landing rollout.

From the onset of the power loss, it took us about two and a half minutes to land. Those were the longest two and a half minutes of my life. The biggest takeaway for me was a solid reinforcement of why it is so important to understand our aircraft systems, capabilities and emergency procedures.

Although this flight started as an evaluation of my student, it turned into a true test of my airmanship. Fortunately, my training paid off and I passed.

LT CADORET FLIES WITH VT-3.

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Stick to the Plan

BY LTJG IVAN CHERNOV AND LT JASON SUTTON

It was the first week of a nine-month deployment onboard USS *Harry S. Truman* (CVN 75). Our crew was scheduled for an early morning log run, followed by a standard plane-guard flight to support carrier qualifications. The plan was to drop off a passenger and his baggage on a cruiser, then return to the carrier for a SAR training flight while also standing plane guard.

The scheduled timeline for the event was tight. We had to launch at 1130 for an 1145 overhead at the cruiser and make it back to support the carrier at 1205. This meant minimal time on the cruiser deck before we had to be within 20 miles of the carrier.

During the brief we verified the position of the cruiser with strike ops and briefed the timing aspect of our schedule. The cruiser was 19 miles away, and if we got off the deck early we could make it there and back with plenty of time to spare. Because this was my first flight in the squadron, we decided to walk to the aircraft early to make sure we'd be ahead of schedule. We managed to get airborne by 1115, 15 minutes early. This left us with what we thought would be plenty of time to complete the evolution. However, the passenger arrived with more baggage than we had planned. It took at least five minutes after getting chocked and chained on the cruiser to move him and the cargo out of the helicopter.

Shortly after takeoff, we completed communications checks and switched to the cruiser's TACAN. To our surprise, the DME read 45 miles, which was 26 miles farther away than briefed. Our crew reassessed the situation, and we decided that we could buster to the cruiser and still get back in plenty of time.

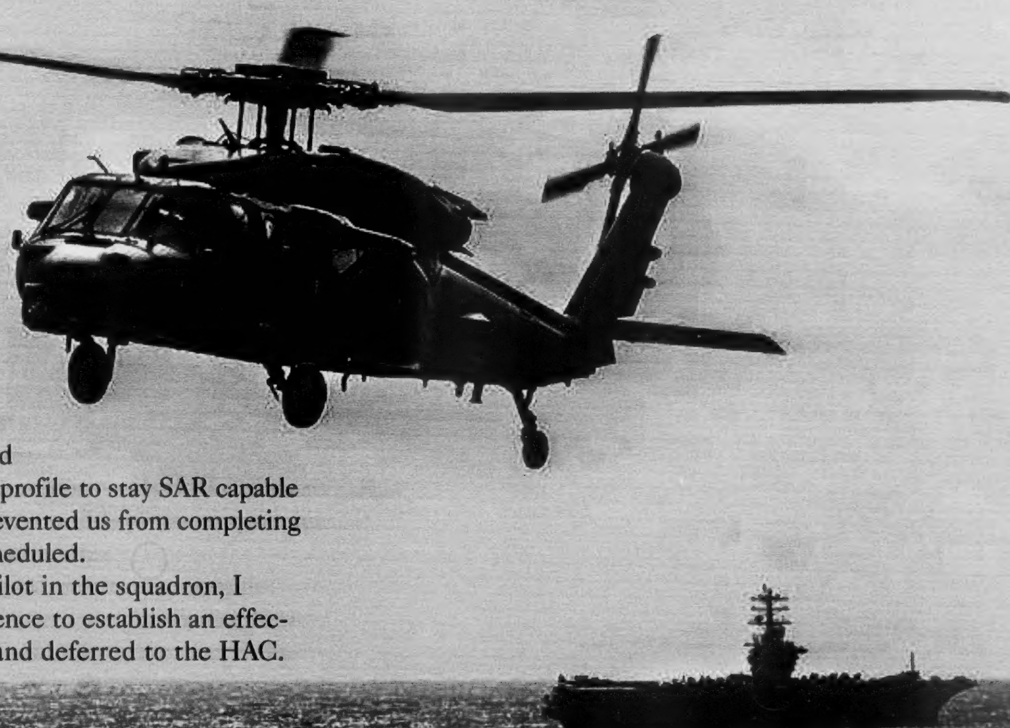
By 1130 we spotted the ship and tried to establish comms. We were in the cruiser's port delta a few minutes later. We tried to contact the ship on every available frequency, with no luck. We contacted the carrier and asked them to verify the frequencies we had on hand. The carrier replied that our frequencies were correct and that they had good communications with the cruiser. At exactly 1145, our original overhead time, the ship finally responded.

We were farther away from the carrier than anticipated, and we were quickly running out of time. The crew discussed the possibility of not returning to the carrier on time to assume our plane-guard duties. We decided to set a hard limit on when we would return to mom. Our crew decided to give the cruiser five minutes before cancelling the passenger transfer. Five minutes later, the ship was not ready for us, so we told them that we were departing and would return later in the day. At the same time, the helicopter control officer (HCO) came back and asked us to wait one more minute for the green deck.

This is when our crew resource management (CRM) began to break down. Because we were so close to delivering the passenger, we decided to extend our

time. This was our first mistake. It was now 1151, and we were still 30 miles from the carrier, with plane guard starting at 1205. In retrospect, we should have stuck to our original timeline to arrive at the carrier on time. Instead, we let ourselves become indecisive, tempted by at least getting the passenger dropped off. We continued to circle the cruiser.

Five minutes later, we still didn't have a green deck. We again announced our intentions to depart, and again the HCO repeated his request that we stay for one more minute. The crew decided to set up for an approach, and if the deck went green we would land. Otherwise, we would leave to get back within 20 miles of the carrier. Finally, on short final the cruiser called green deck, while at virtually the same time the carrier called to find out when we would be on station, because our absence was delaying flight operations for the rest of the air wing. We waved off and turned back to the carrier.



We set max torque and bustered back to the carrier. We arrived on station at 1209, four minutes late, and we still had the passenger onboard. To make matters worse, we ended up burning too much fuel while bustering back and had to set a max-endurance profile to stay SAR capable until our land time. This prevented us from completing the SAR training we had scheduled.

Being the most junior pilot in the squadron, I didn't feel I had the experience to establish an effective timeline for the flight and deferred to the HAC. By being indecisive as a crew, we ended up having the cruiser needlessly set flight quarters, delayed CQs by four minutes, and did not complete the grade card for the SAR flight. Basically, we went 0 for 3. Our indecisiveness resulted in an incomplete mission and affected the carrier air wing's plan for that day. Had the distance between the ships been farther, we could have put ourselves in a critical fuel state, inducing our own emergency.

This situation could have been avoided had we stuck to our original departure time from the cruiser. No single CRM principle is more important than any other. They are all critical and must be continually used to ensure a safe and successful flight.

No matter what rank you wear or how many hours you have flown, always use CRM and be assertive.

LTJG CHERNOV AND LT SUTTON FLY WITH HSC-7.

IF WE CAN PREVENT ONE MISHAP THROUGH AN INCREASED EMPHASIS ON PAST MISHAPS AND HAZARDS, THEN THE EFFORT IS WORTH IT.

— MAJ ROB ORR, USMC